User Manual and Parts Book

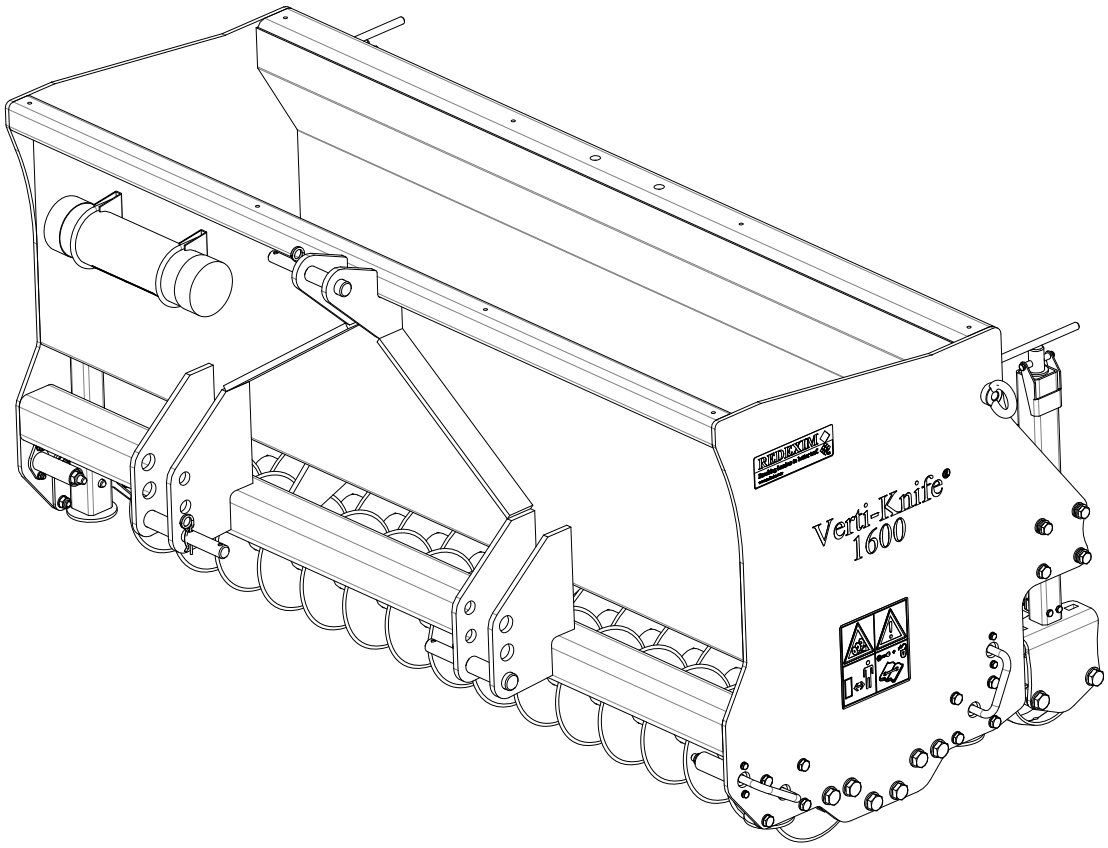
Verti-Knife®

Model 1600
Serial number:

REDEXIM
Kwekerijweg 8
3709 JA Zeist
the Netherlands
T: (31)30 6933227
F: (31)30 6933228
E: verti-drain@redexim.com
www.redexim.com

TM

Translation of the original operating instructions



ATTENTION:

IT IS OF THE UTMOST IMPORTANCE TO READ THIS USER MANUAL CAREFULLY PRIOR TO USING THE VERTI-KNIFE® IN ORDER TO USE THE MACHINE SAFELY AND TO OBTAIN THE BEST RESULTS.

1130 English 916.120.204

FOREWORD

Congratulations on your Verti-Knife® purchase! For safe and long-lasting operation of this Verti-Knife®, it is necessary to read and to understand this user manual. It is impossible to work safely with this machine *without* complete knowledge of its content.
The Verti-Knife® is not a machine that works independently. It is the user's responsibility to use the correct tractor. The user must also check the tractor/Verti-Knife® combination on safety aspects such as noise level, user instructions and risk analysis.
The Verti-Knife® is solely intended for grass fields or areas where grass can grow.
The following pages deal initially with the general safety instructions. Every user should know these safety instructions and apply them. At the end of this page, a registration card is inserted. This registration card should be returned to us in order to deal with potential future claims.
This user manual lists many instructions that are numbered in sequence. You should follow this sequence. A ⚠ is an indication of a safety instruction. A ☞ means a tip and/or note.
All information and technical specifications provided at the moment that this document is published are the most recent ones. Design specifications may be changed without prior notice.
This document is a translation of the original operating instructions.
Upon request, the original operating instructions are available in Dutch.

WARRANTY CONDITIONS

WITH DELIVERY THIS VERTI-KNIFE® IS GUARANTEED AGAINST MATERIAL DEFECTS. THIS WARRANTY IS VALID FOR A PERIOD OF 12 MONTHS FROM THE PURCHASE DATE.
VERTI-KNIFE® WARRANTIES ARE SUBJECT TO THE 'GENERAL CONDITIONS FOR SUPPLY OF PLANT AND MACHINERY FOR EXPORT, NUMBER 188' THAT ARE PUBLISHED UNDER THE AUSPICES OF THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE.

REGISTRATION CARD

For your own information, fill in the table below:

Serial number of the machine	
Dealer name	
Date of purchase	
Remarks	

! SAFETY INSTRUCTIONS !

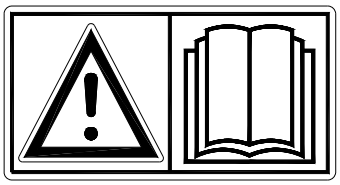


Figure 1

The Verti-Knife® is designed for safe use. This can only be achieved if you completely follow the safety instructions described in this manual.
Read and understand (Figure 1) the manual *before* you start using the Verti-Knife®.
If the machine is not used as described in this manual, this can result in injuries and/or damage to the Verti-Knife®.

(1) The Verti-Knife® is solely intended for work on grass fields or areas where grass can grow.
Any other use is improper. The manufacturer will not accept any liability for damage resulting from improper use. All risks occurring with this are entirely at the expense of the user.
Following the use, maintenance and repair instructions prescribed by the manufacturer is also considered proper use of this machine.

The manufacturer will not accept any liability for unprofessional use and its resulting damage. All risks occurring with this are entirely at the expense of the user.

Following the use, maintenance and repair instructions prescribed by the manufacturer is also considered professional use of this machine.

Inspect the area to be treated *before* using the Verti-Knife®. Remove loose obstacles and avoid irregularities.

(2) The Verti-Knife® is manufactured according to the latest technical understanding and is safe to use.

When unskilled people use, maintain or repair the machine, this could result in injuries to the user *and* to third parties. **This must be avoided!**

Always use the Verti-Knife® in combination with the correct tractor as described in the technical data.

(3) All persons assigned to operate, maintain and repair the **Verti-Knife®** by the owner must completely read and understand the operation manual and in particular the chapter of **Safety Instructions**.

The user is responsible for a **safe Tractor/Verti-Knife® combination**. **This entire combination must be tested** for noise, safety, risk and user friendliness. User instructions should also be drafted.

(4) The user is obliged to check the **Verti-Knife®** for **visible damage and defects** before using the Verti-**Knife®**.
Modifications to the **Verti-Knife®** (including its operations) that have a negative impact on safety must be rectified immediately.
For safety reasons it is in principle not permitted to make changes or adjustments to the **Verti-Knife®** (except those approved by the manufacturer).

If modifications to the Verti-Knife® have been made, then the current CE marking is cancelled. The person that has made these modifications has to apply for a new CE marking himself.

Check the Knife® for loose bolts, nuts and components *before* every operation.

If present, check the hydraulic pipelines regularly and replace these when the hydraulic pipelines are damaged or appear old. The pipelines that are replaced should comply with the technical requirements of the manufacturer.

If a hydraulic installation is present, you should **always** make it pressure-free *before* working on this installation.

NEVER use the **Verti-Knife®** in the absence of protective guards and safety stickers.

NEVER crawl under the **Verti-Knife®.**
If necessary, tilt the **Verti-Knife®**.

NEVER step off the tractor while the motor is running.

In case of maintenance, adjusting and repairs, it is necessary to block the **Verti-Knife®** in order to prevent sinking away, driving off and/or sliding off.

Always switch off the tractor motor, take the tractor's key out off the ignition and disconnect the Power Take-Off (PTO) in case of maintenance, adjusting and repairs (Figure 2).

Figure 2

With regards to the safety of the machine and the user, use only original **Verti-Knife®** parts for maintenance and repairs.

Only authorised technical personnel may carry out repairs to the **Verti-Knife®.**

Keep a record of the repair activities.

(5) The general applicable health & safety (Dutch: ARBO) regulations must also be followed in addition to the instructions in this user manual.

Relevant traffic regulations also apply in case of using public roads.

Transporting persons is not permitted!

Do not use the **Verti-Knife®** in the dark, in heavy rain/storm or on slopes with an angle larger than 20 degrees.

(6) All persons that are going to operate the **Verti-Knife®** must be familiar with all the functions and control elements of the **Verti-Knife®** *before* starting any work activities.

Attach the **Verti-Knife®** to the towing vehicle according to the regulations. (**Danger of injuries!**)
Check whether you have a clear field of vision – both close by and far away – *before* you depart.

A safety sticker with an identical meaning is attached to the sideboard (Figure 5) of the **Verti-Knife®**. This safety sticker must always be clearly visible and legible and must be replaced if they have become damaged.

During operation, **NO persons are allowed within the danger zone** of the **Verti-Knife®**, because there is danger of physical injuries caused by moving components. (Figure 3)

Keep a distance of minimum 4 metres! (Figure 4)

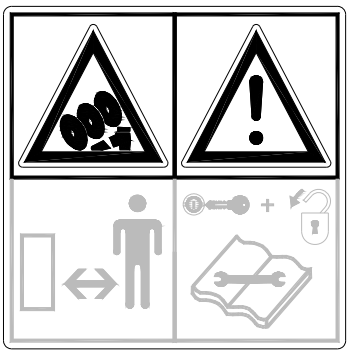


Figure 3

Figure 4

Pay attention to the permitted lifting capacity of the towing vehicle.

Dress appropriately. Wear sturdy shoes with steel toecaps, long trousers and tie up long hair. Do not wear loose clothing.

(7) Location of the safety stickers (Figure 5)

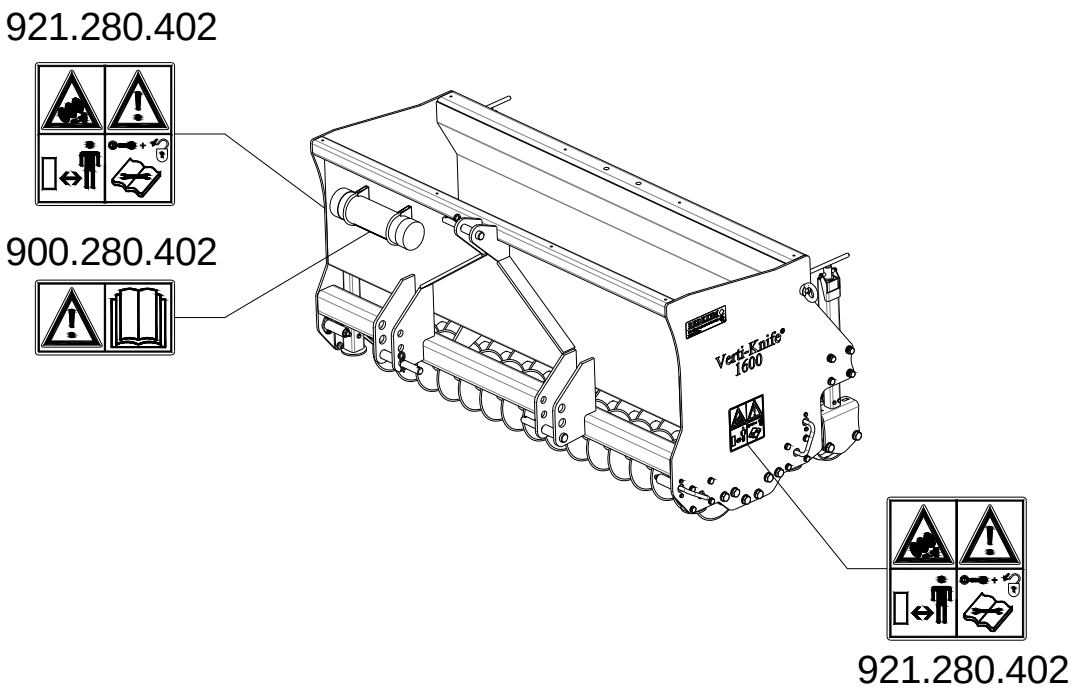


Figure 5

Used oil/grease is harmful to the environment. Dispose of these substances according to the regulations that apply in your location.

CE

EU DECLARATION

We – **Redexim BV, Utrechtseweg 127, 3702 AC Zeist, Holland** – declare entirely under our own responsibility that the product

VERTI-KNIFE WITH A MACHINE NUMBER AS INDICATED ON THE MACHINE AND INDICATED IN THIS MANUAL

to which this declaration refers, complies with stipulation of the 2006/42/EC machine directive.

Zeist, 26.07.11

A.C. Bos
Manager Operations & Logistics
Redexim Holland

TABLE OF CONTENTS

WARRANTY CONDITIONS 2
REGISTRATION CARD 2
SAFETY INSTRUCTIONS 3
EU DECLARATION 7
1.0 TECHNICAL DATA 9
2.0 GENERAL DESCRIPTION 10
3.0 PREPARING THE MACHINE 11
4.0 ATTACHING THE MACHINE TO THE TRACTOR 12
5.0 ADJUSTING THE WORKING DEPTH 13
6.0 DRIVING SPEED 14
7.0 USING THE VERTI-KNIFE® 14
8.0 START/STOP PROCEDURE 14
9.0 TRANSPORTING THE VERTI-KNIFE® 15
10.0 DETACHING THE VERTI-KNIFE® 16
11.0 TROUBLE SHOOTING (PROBLEM ANALYSIS) 17
12.0 MAINTENANCE 17
13.0 CLEANING THE VERTI-KNIFE® 18
14.0 REPLACING THE KNIVES 18
15.0 OPTION: ROLLER WITH LARGE KNIVES 19

1.0 TECHNICAL DATA

Model	1600
Working width	1.6 m
Working depth	Disk Ø200 up to 40 mm Disk Ø450 up to 100 mm
Tractor speed	Unlimited depending on the type of tractor and the condition of the ground
Weight	370 kg (816 lbs)
Container content	0.205 m^3 (7.24 ft^3)
Number of knives	1 axle with 16 x Ø200 mm knives 1 axle with 15 x Ø200 mm knives Optional: 1 axle with 6 x Ø450 mm knives
Distance between the knives	97 mm in case of Ø200 mm knives 290 mm in case of Ø450 mm knives
Thickness of the knives	Ø200 – 3 mm Ø450 – 4 mm
Recommended tractor Minimum lifting capacity	40 hp 450 kg /990 lbs empty container 770 Kg /1694 lbs container filled with sand
Maximum processing capacity	With a speed of 10 km/h (6,2 mph): 16,000 m^2 (172,222 ft^2)
Three-point connection	Cat. 1 & 2
Standard components	- Double axles with Ø200 mm knives - Rear roller adjustable in height - Integrated adjustable legs - Toolbox including a manual
Optional	- Single axle with Ø450 mm knives

2.0 GENERAL DESCRIPTION

The Verti-Knife is a processing machine for cutting through a grass layer.

FIRST INSTALLATION – TAKING THE MACHINE OFF THE PALLET

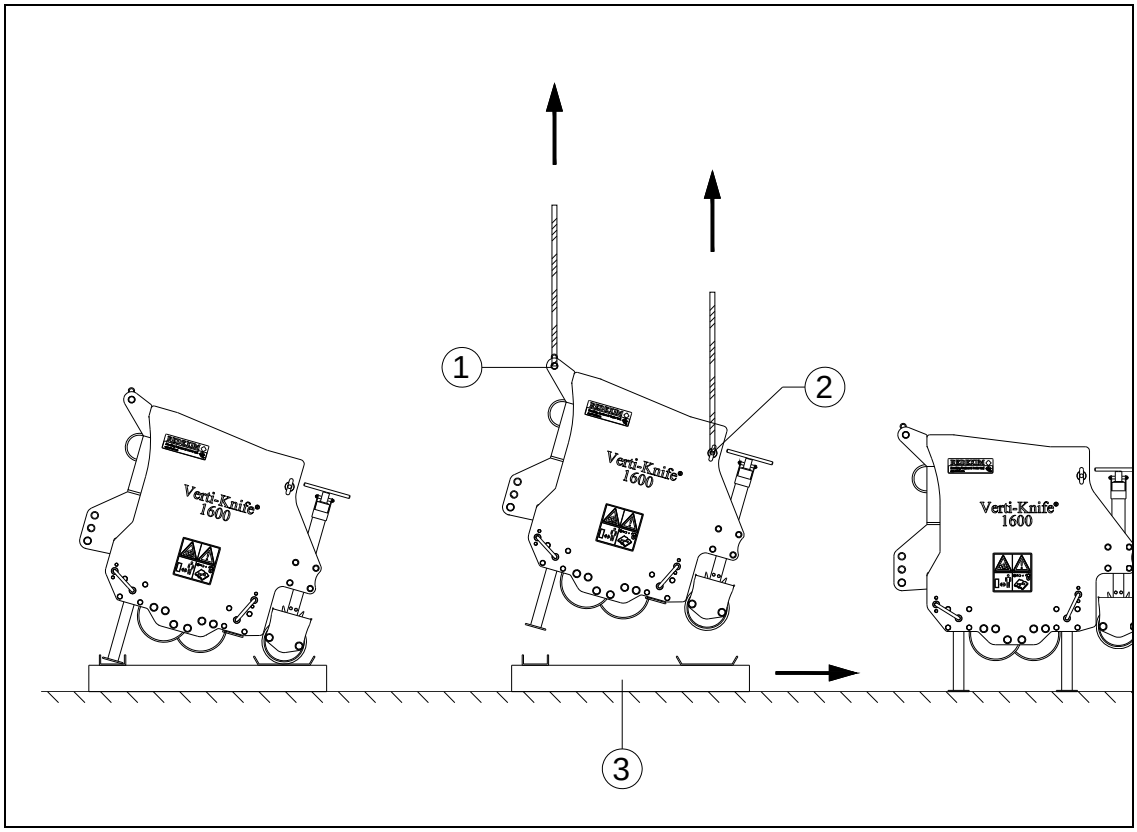


Figure 6

The machine is placed on the pallet under an angle. To remove the pallet and to place the machine horizontally on the ground, take the following steps (see Figure 6):

⚠ !! **NEVER crawl under the machine !!**

1. Attach a cable to the upper 3-point (1) and the lifting point (2) at both sides of the machine.

   ⚠ !! **Make sure that the cable/crane/lift can hoist minimum 500 kg (1100 lbs) !!**

2. Lift the machine off the pallet (3) and pull the pallet from under the machine.
3. Put the adjustable legs in the lowest position.
4. Lower the machine controlled and calmly until it stands completely on the ground.

   ⚠ !! **Careful: Keep your distance; the machine can slide !!**

5. Remove the cable.
6. Connect the machine to the tractor (please refer to Chapter 4.0).

3.0 PREPARING THE MACHINE

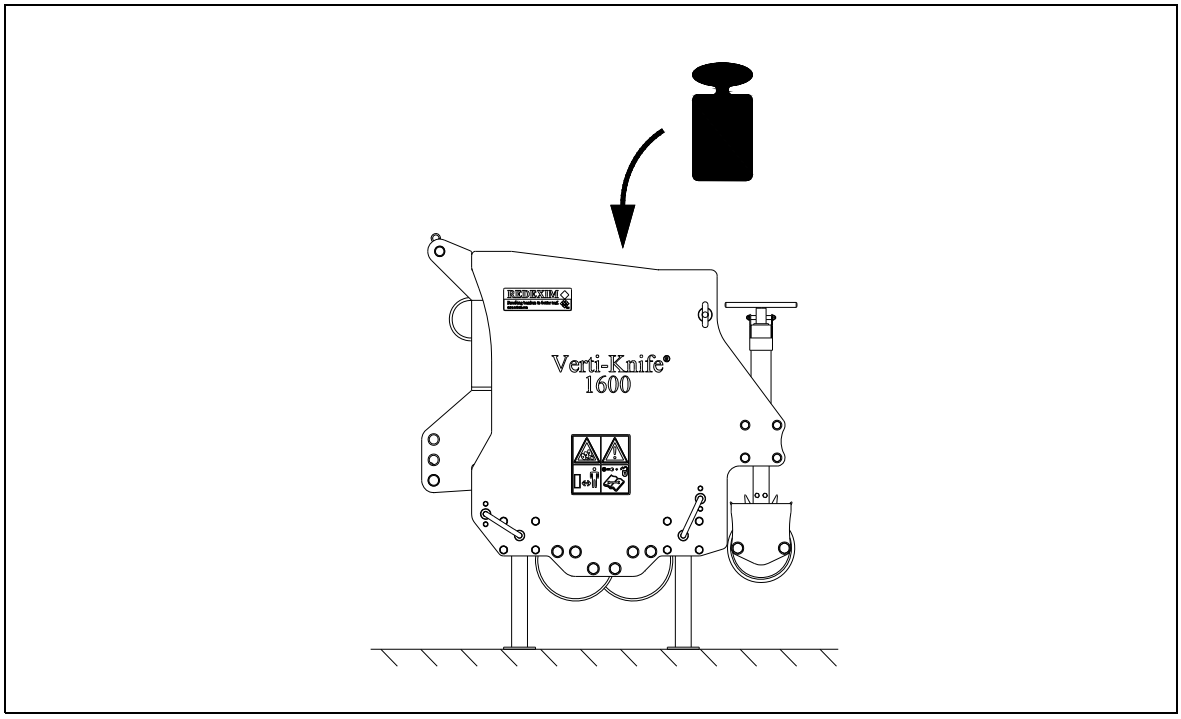


Figure 7

⚠ !! **Make sure that the Verti-Knife® stands firmly on the ground and cannot sink or slide *BEFORE* YOU PREPARE THE MACHINE !!**

The machine can ready to use as soon as it is taken off the pallet.
The machine can be made heavier by filling the container with sand or gravel, for example.

4.0 ATTACHING THE MACHINE TO THE TRACTOR

Checking procedure before starting to attach the Verti-Knife®:

- Check the Verti-Knife® for visually discernable damage and repair this if safe operation of the machine is no longer guaranteed.
- Check whether all the nuts and bolts are tight.
- Check whether all safety stickers are present on the machine and are not damaged.
  NEVER use the machine without these items.

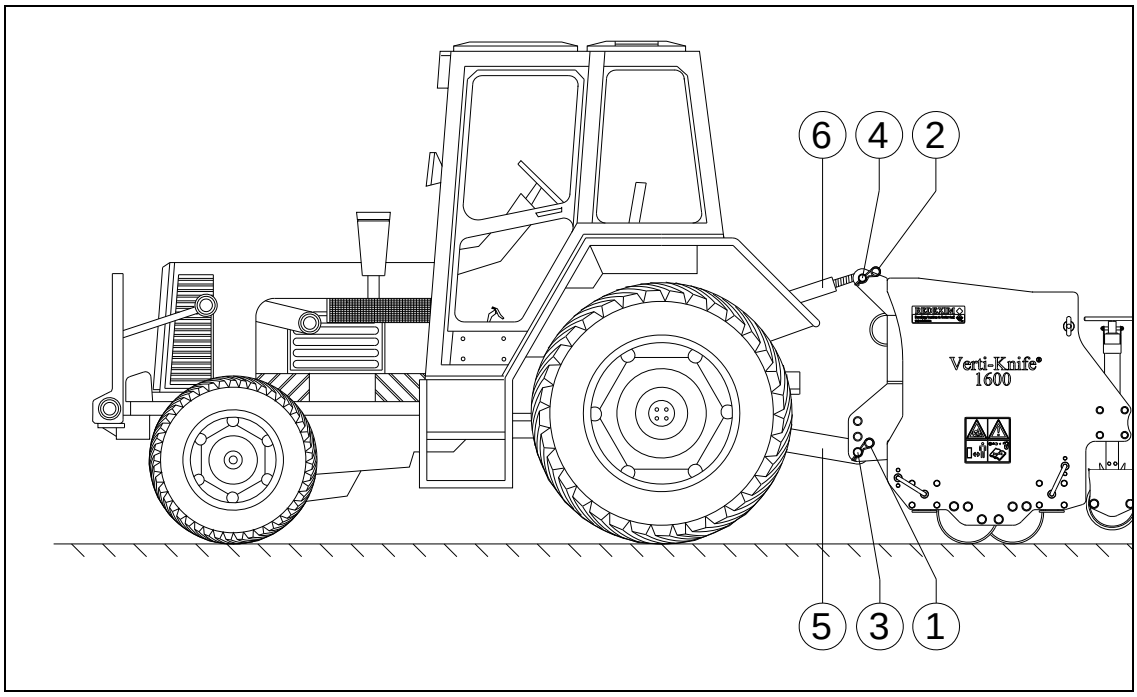


Figure 8

The Verti-Knife® can be attached to the tractor by means of the 3-point attachment.

The procedure is as follows (see Figure 8):

1. Remove the locking pins (1 & 2) and the pins (3 & 4).
2. Drive the tractor carefully backwards so that the lower connecting arms (5) can be attached to the frame.

   ⚠ !! **Make sure that the tractor is blocked well and cannot move on its own accord !!**

   ⚠ !! **Switch off the tractor before descending !!**
3. Using the locking pins (1) and the pins (3), connect the lower connecting arms (5) with the bottom 3-point connection located on the frame.
4. Set the stabilizer of the tractor to 100 mm lateral stroke.
5. Mount the top rod (6) of your tractor and turn it outward until it reaches the same height as the 3-point stop connection of the Verti-Knife®.
6. Connect the top rod (6) to the frame with the pin (4); secure the pin (4) with the supplied locking pin.
7. Turn the top rod (6) inwards so that it becomes pressurized.

   ⚠ !! **Make sure that all securing pins are locked before lifting the Verti-Knife® !!**

5.0 ADJUSTING THE WORKING DEPTH

The working depth of the Verti-Knife® can be adjusted by turning the spindles (1) at the backside of the machine (Figure 9).

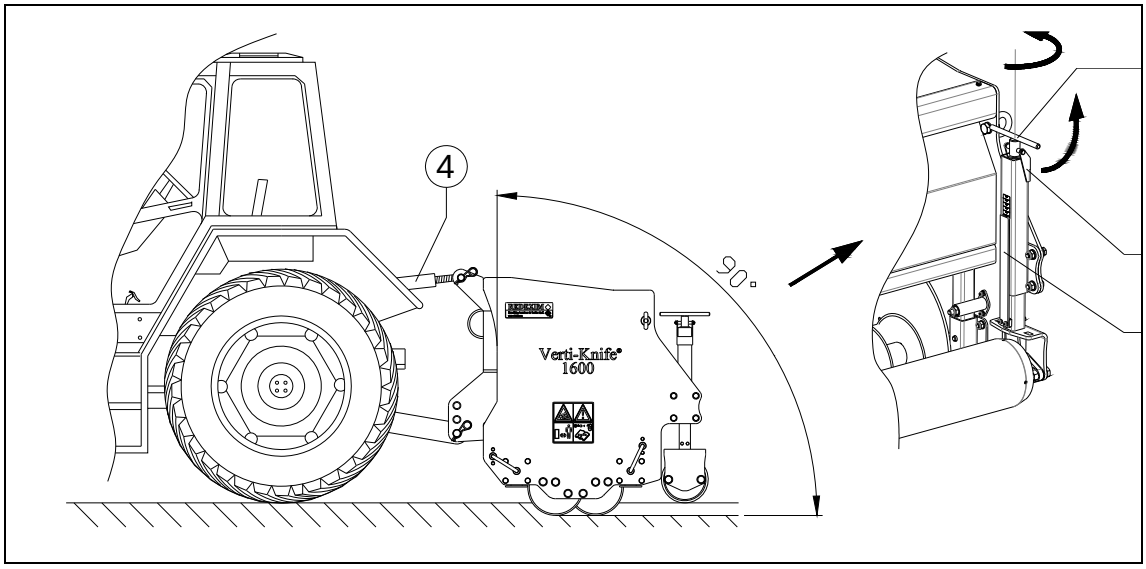


Figure 9

⚠ !! **Make sure that the tractor is blocked well and cannot move on its own accord !!**

⚠ !! **Switch off the tractor before descending !!**

The start procedure is as follows:

1. Lift the machine so that it hangs freely above the ground.
2. Adjust the spindles (1) by tipping up the locking clamps at the topside and turning the spindles (1) inward or outward.

   ⚠ !! **See the technical data for adjusting the machine to the maximum working depth !!**

3. Adjust both sides of the machine at the same depth so that all knives enter the ground at the same depth. For this purpose, use the indicator strip (3) and the indication stickers that are in back of it.
4. Fasten the spindles by tipping down the locking clamps (2) at the topside of the spindles.
5. Lower the machine onto the ground.
6. Adjust the machine horizontally by turning the top rod (4) of the tractor inward or outward.

NEVER adjust the machine in such a way that it could damage the subsoil.

6.0 DRIVING SPEED

Theoretically the driving speed of the Verti-Knife® is unlimited. However, in practice you should adjust the maximum speed to the ground that should be treated, the knife adjustment and the type of tractor that moves the Verti-Knife®.
Too high speed can cause needless damage to the machine.

7.0 USING THE VERTI-KNIFE®

Before using the Verti-Knife® in a location, you should check the following items:

1. Are there loose objects in the field? First remove these objects.
2. Are there slopes? The maximum slope is 20 degrees for the Verti-Knife®.
   Always go from top to bottom.
3. Are there cables/pipes buried in the ground? If so, determine their depth and adjust the working depth of the machine to 60% of the depth of the cables/pipes.
4. Are there hard objects in the ground? Adjust the working depth.
5. Is there danger of flying objects (e.g., golf balls) that distract the attention of the driver? If so, the Verti-Knife® **CANNOT** be used.
6. Is there danger of sinking/sliding away? If so, postpone using the Verti-Knife®.
7. If the soil is frozen or very wet, postpone the activities until conditions improve.

8.0 START/STOP PROCEDURE

The start procedure is **VERY** important. If this procedure is not executed as described below, it might result in serious damage to the Verti-Knife®.

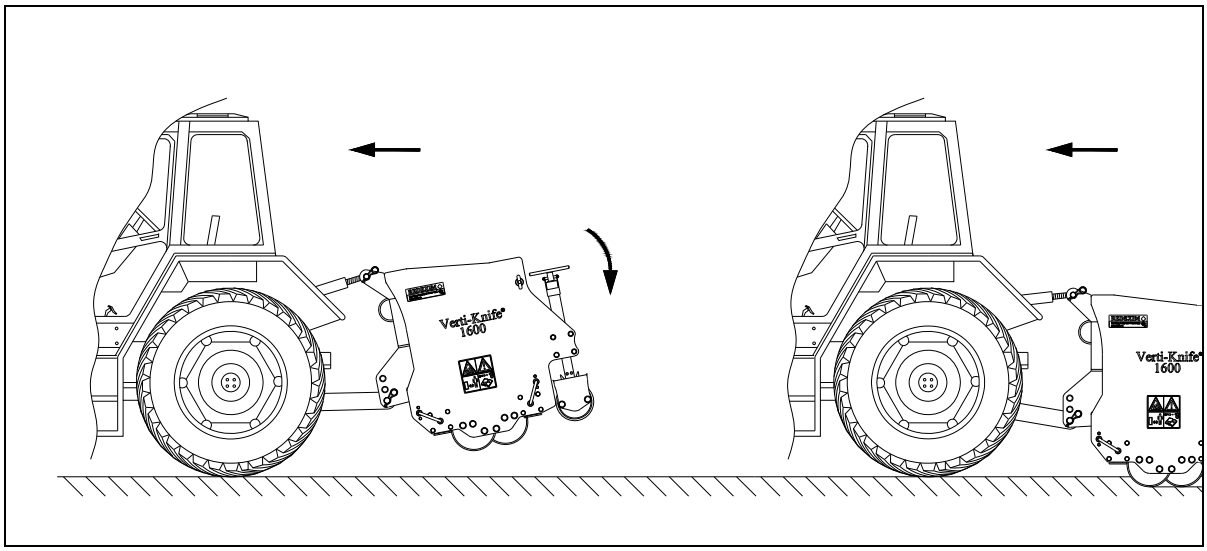


Figure 10

The start procedure is as follows (Figure 10):

1. Have a good look at the Verti-Knife® and see whether all components function properly.
   ⚠ !! **If not, first solve the problems *before* using the Verti-Knife® !!**
2. Connect the Verti-Knife® to the tractor as described in Chapter 4.0.
3. Lift the Verti-Knife®.
4. Drive to the spot where the processing should take place.
5. Adjust the working depth as described in Chapter 5.

6. Engage the tractor in the correct gear.
7. Start driving the tractor and lower the Verti-Knife® smoothly into the ground.
8. Accelerate to the optimal speed for the surface that should be processed.

☞ **Work in straight lines; working in bends causes damage to the surface that should be processed.**

Stopping occurs as follows:

1. Lower the driving speed of the tractor.
2. While driving at low speed in a straight line, lift the Verti-Knife® out of the ground.

☞ **If the Verti-Knife® is lifted in a bend or while standing still, the ground might get damaged.**

3. Go to the next location and start all over again as described in this chapter.

9.0 TRANSPORTING THE VERTI-KNIFE®

The user is responsible for transporting the Verti-Knife® in back of the tractor over public roads. Verify the national legislation regarding the regulations.
On open fields while the machine is raised, the maximum permitted speed is 12 km/h (7.5 mph) due to the weight of the Verti-Knife®.
A higher speed can be dangerous for the driver and/or the public and can even damage the machine.

⚠ !! **When the machine is raised off the ground, the front axle of the tractor has to support minimum 20% of its weight. !!**

10.0 DETACHING THE VERTI-KNIFE®

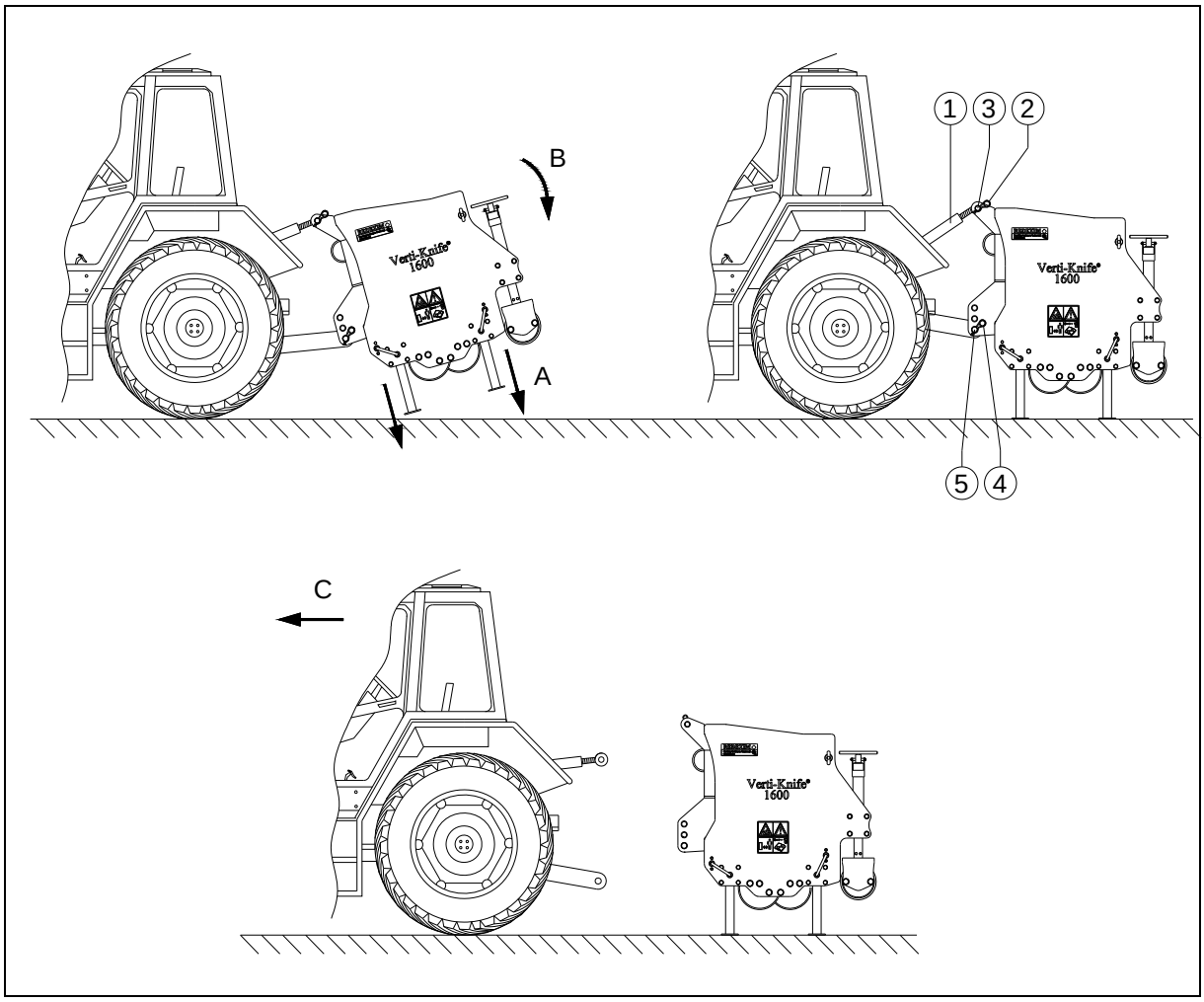


Figure 11

The machine can be detached from the tractor in the following manner: (Figure 11)

1. Drive the Verti-Knife® to a parking area with a firm/flat surface.
2. Put the adjustable front and rear legs in the lowest position (A).
3. Lower the Verti-Knife® controlled and calmly until it stands completely on the ground.

   ⚠ !! **Make sure that the tractor is blocked well and cannot move on its own accord !!**

   ⚠ !! **Switch off the tractor before descending !!**

   ⚠ !! **Make sure that the Verti-Knife® stands firmly on the ground and is blocked against sliding before descending from the tractor !!**

4. Release the top rod (1).
5. Take the locking pin (2) out of the pins (3) and pull the locking pin out of the top rod connection.
6. Take the locking pins (4) out of the pins (5) and pull the locking pins out of the Verti-Knife® frame so that the bottom lifting arms of the tractor are released.

   ⚠ **!! Make sure that the Verti-Knife® is stable !!**

7. Start the tractor and drive off.

11.0 TROUBLE SHOOTING (PROBLEM ANALYSIS)

Problem	Possible cause	Solution
Too much damage to the processed ground	Knives are damaged.	Try to repair the knives. Mount new knives.
	Knives are adjusted too deeply.	Adjust the working depth.
	Knives are crooked.	Straighten the knives. Mount new knives. Another knife setting.
	Not driving in a straight line.	Try to drive in a straight line.
	Soil is too wet.	Postpone the work until the soil is dry.
Felt layer / substrate not sufficiently cut.	Knife adjustment is too shallow.	Change the knife adjustment.
	Knives are blunt.	Sharpen the knives. Mount new knives.
	Ground is too hard/dry.	Use a different knife adjustment. Fill the container with additional weight / give water first.

12.0 MAINTENANCE

Only authorised technical personnel may carry out repairs or adjustments to the Verti-Knife® due to the safety of the machine and the user.

With regards to the safety of the machine and the user, use only original **Verti-Knife®** parts for maintenance and repairs.

Time schedule	Check point	Method
Before **every** use	Check for loose bolts / nuts.	Tighten loose bolts / nuts.
After **every** 20 working hours	Check for broken or bent knives.	Repair or replace the knives.
	Check for loose bolts / nuts.	Tighten loose bolts / nuts.
	Presence and readability of the safety stickers (See Figure 5)	Replace if these are damaged.
	Grease the bearings.	Use EP2 lubrication.

13.0 CLEANING THE VERTI-KNIFE®

Here are the cleaning instructions in order to keep the Verti-Knife® in tip-top condition.

- NEVER spray the bearing seals with a high-pressure pistol.
- Do NOT use aggressive soap or cleaning agents.
- NEVER operate the Verti-Knife® while cleaning it.
- Make sure that the machine is stable and that it cannot sink or slide.
- Make sure that the safety stickers are always clearly readable.

14.0 REPLACING THE KNIVES

The procedure for mounting new knives is as follows (Figure 12):

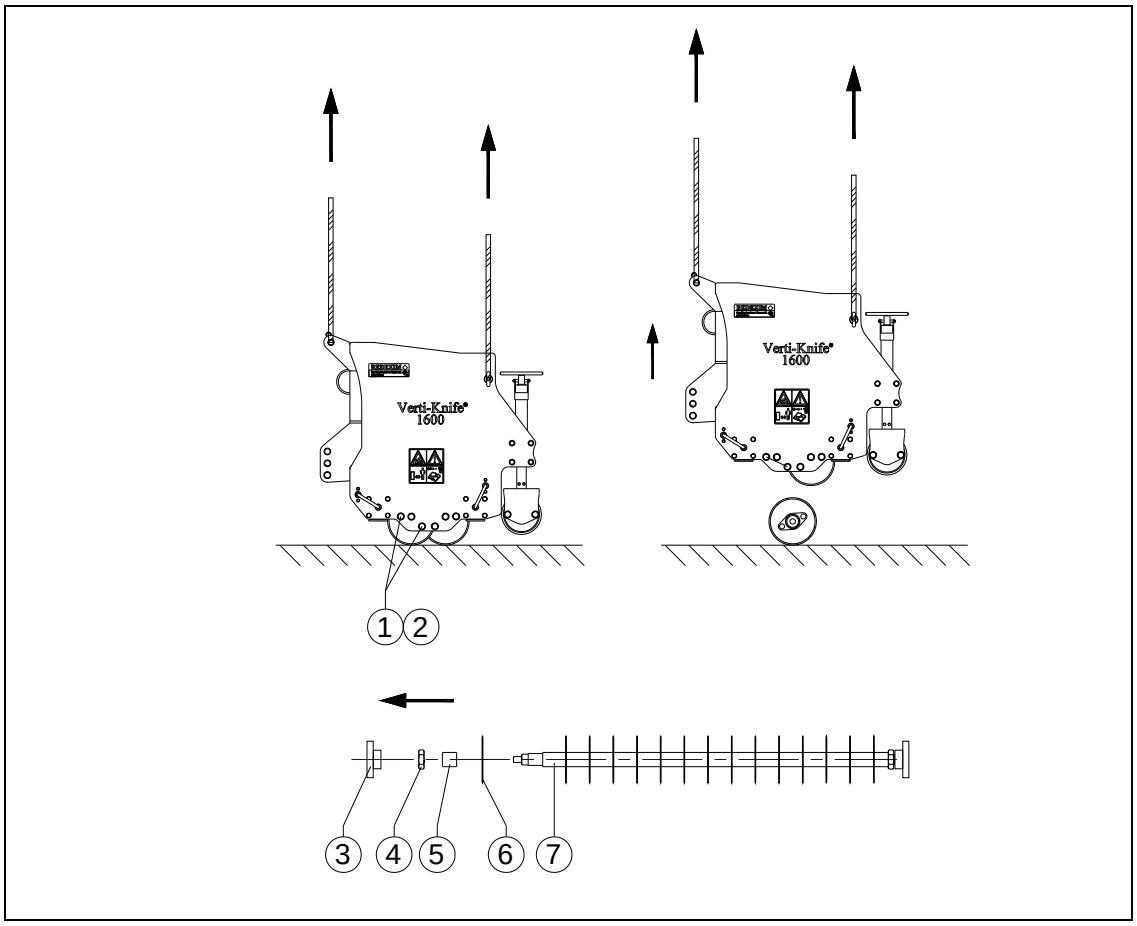


Figure 12

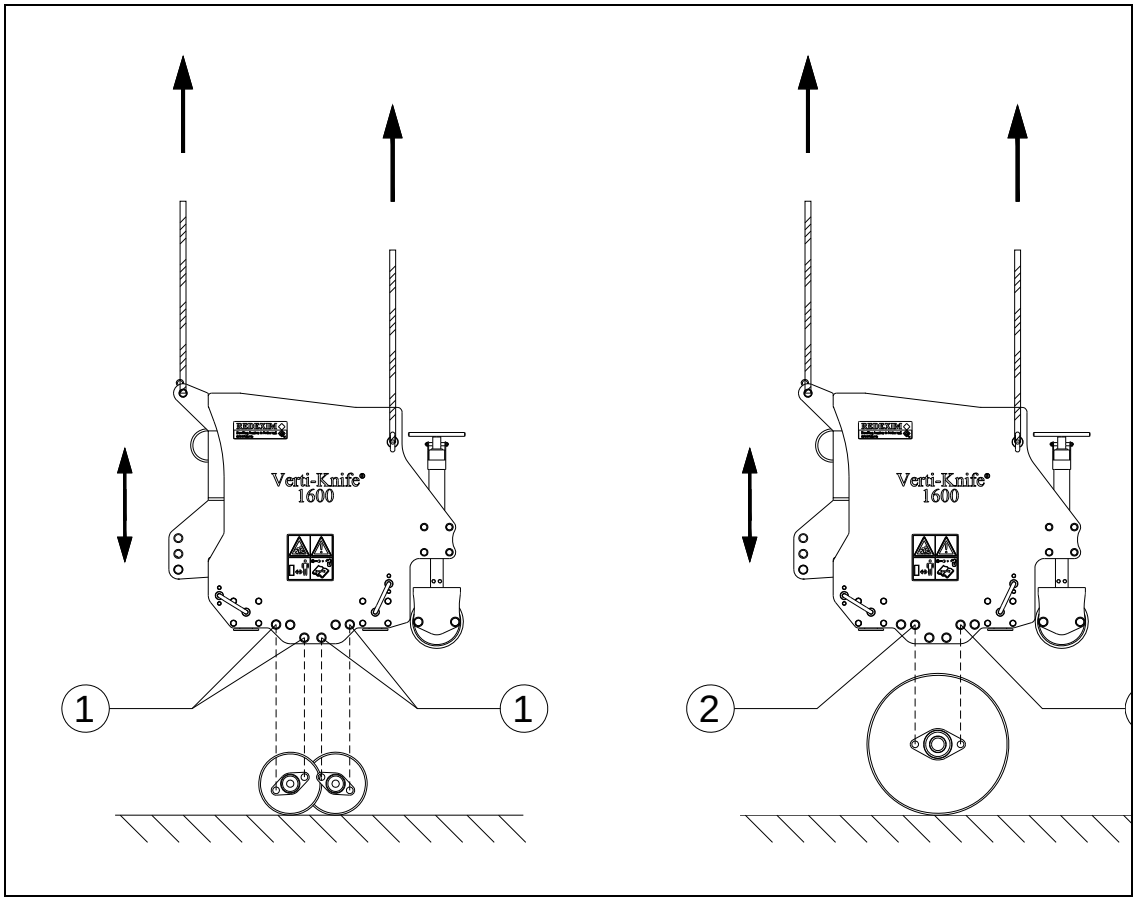
⚠ !! **Watch out: the knives are sharp !!**

1. Place the machine on a firm underground.
2. Detach bolts (1) and nuts (2) at both sides of the axle.
3. Carefully lift the machine until the axle is completely free.
4. Pull the axle from under the machine and secure it against rolling away.
5. Detach the bearings (3).
6. Detach the nut (4).
7. Remove the bush (5).
8. Remove the knives (6) and the remaining bushes (7) from the axle.
9. Replace the old knives (6) with new ones.

10. Slide the new knives (6) including the bushes (7) over the axle.
11. Mount the bush (5).
12. Mount the nut (4) and tighten it.
13. Mount the bearings (3).
14. Return the axle under the machine.
15. Slowly lower the machine in a controlled manner.
16. Mount the axle in the machine and tighten it with the bolts (1) and nuts (2).
17. The machine is ready for use once again.

15.0 OPTION: ROLLER WITH LARGE KNIVES

If required, an axle with large disks is available for the Verti-Knife® in order to cut at a greater depth. This axle's article number is 216.116.002.



The procedure for mounting this axle is as follows:

⚠ !! **Watch out: the knives are sharp !!**

⚠ !! **NEVER crawl under the machine !!**

1. Remove the bolts and nuts (1) at both sides of the two axles.
2. Carefully lift the machine until the axles are completely free.
3. Pull the axles from under the machine and secure them against rolling away.
4. Place the new single axle including the new bearings and the large disks under the machine and secure these against rolling away.
5. Slowly lower the machine in a controlled manner.
6. Mount the axle in the machine and tighten it with the bolts and nuts (2).
7. The machine is ready for use.

Please refer to Chapter 5.0 for adjusting the working depth. Please refer to the technical data for the maximum working depth.